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**Synopsis of the species of CYMATODERA and TRICHODES
of the United States.**

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The following paper is presented to the students of our fauna, with the hope that the recognition of our species may be rendered more certain and easy of accomplishment, the descriptions being so widely scattered.

The most recent synopsis was published by Dr. Leconte, (*Ann. Lyc. V.*, p. 15), and contained but seven species. In the meantime, a still greater number have been described, and in the present essay three more will appear.

This great increase in the number of species, has rendered it absolutely necessary to seek for characters to separate them, other than those of color or sculpture, as there are certain forms so nearly alike superficially, as to render it almost impossible to separate them even by comparison, while the descriptions give no certain clue.

The antennæ have given me the means of dividing the genus into six primary groups, five being represented by one species each. Secondly, the structure of the terminal abdominal segments, ventral and dorsal, are extremely useful. Finally, two species are apterous, although they belong, sexually, with the six species which immediately precede them.

In species six, seven, and eight, in the accompanying table, the last ventral segment is smaller than the last dorsal, so that when viewed from beneath, the edge of the dorsal is visible beyond that of the ventral. In the species which follow, the ventral is large and almost completely hides the dorsal, and its lateral margins are reflexed and partially enclose the pygidium.

In the accompanying table, the division is not in all cases carried to the point of separating the species individually. In these instances, the separation must be based on sexual characteristics, as no description, however detailed, will serve to distinguish the species if the sexual characters are omitted.

With this brief prelude, the reader is referred to the following table :

Antennæ with joints two and three small, round, together shorter than joint four.....**longicornis.**

Antennæ with joints two, three and four equal, and each shorter than any of the following joints.....**puncticollis.**

Antennæ with joint two short, scarcely half as long as joint three.....**Xanti.**

Antennæ with joints two and three conical, equal, together but little longer than joint four.....**usta.**

Antennæ with joints two to ten similar, and nearly equal, joint eleven longer.

Eleventh joint of antennæ elongate, equal to seven, eight, nine and ten in ♂, and to nine and ten in ♀, intermediate joints short...**brunnea.**

Eleventh joint but little longer than the tenth, joints two to ten feebly subserrate and slender.

Body winged, base of elytra broader than base of thorax.

Last ventral segment in both sexes smaller than the last dorsal, and never deeply emarginate in the males.

Last dorsal of male broadly emarginate.

Body black, thorax and legs yellow.....**bicolor.**

Last dorsal of male with feeble notch at middle.

Color uniformly dark brown, legs paler.....**inornata.**

Last dorsal of male with tooth at middle.

Color pale brownish, legs and transverse band of elytra yellowish, testaceous.....**fascifera.**

Last ventral segment broader than the last dorsal, the sides of the former reflexed, partly enclosing the latter.

Elytra sinuate at tip, sutural angle prolonged in ♂. Striæ very fine, arranged in pairs, alternate intervals broader.....**californica.**

Elytra rounded at tip. Striæ equidistant.

Legs brown; body brown, elytra with one median transverse band..... { **morosa.**
Belfragei.

Legs pale testaceous.

Elytra brownish testaceous, with one median transverse, pale band..... { **punctata.**
fuscula.
oblita.

Elytra brownish, with several pale, transverse undulating bands, or in great part testaceous.....**undulata.**

Body apterous, elytra at base not wider than the thorax.

Elytra gradually broader toward apex, tips rounded..... { **angustata.**
ovipennis.

C. longicornis, Lec.—Pale brown, basal half of elytra and legs testaceous, surface sparsely pubescent. Head sparsely punctured, eyes large and prominent. Antennæ equal in length to three-fourths the body, joints two to three small, equal, together shorter than fourth, five to eleven gradually increasing in length. Thorax one-third longer than wide, base slightly narrower than apex, in front of middle feebly constricted, behind the middle compressed laterally, disc with few fine punctures and a rather broad ante-scutellar impression. Scutellum emarginate at tip. Elytra at base nearly twice the base of thorax, humeri very distinct, sides nearly parallel, apices conjointly rounded, disc moderately convex, with rows of quadrate punctures becoming feebler to middle, and entirely obliterated behind it. Body beneath nearly smooth, paler than above and sparsely pubescent. Length .26—.32 inch; 6.5—8 mm.

Male.—Fifth ventral slightly emarginate at middle, sixth more deeply and broadly emarginate, wider than the last dorsal, broader than long, narrowed to tip, apex broadly emarginate and with the angles obtuse. (Pl. I, fig. 1).

Female.—Fifth ventral semicircular, flattened at tip, last dorsal semicircular with the margin slightly reflexed.

Occurs at Santa Fe, New Mexico. Utah, (Ulke). The ♀ from Utah is the larger, and has the testaceous space reduced to a large irregular blotch on each elytron.

C. puncticollis, Bland.—Piceous, moderately shining, legs and antennæ brownish, surface sparsely pubescent. Head sparsely punctured, eyes moderately prominent. Antennæ half the length of body, joints two, three and four, obconical, equal, each much shorter than any of the following joints, five to ten equal, eleven somewhat longer. Thorax one-fourth longer than wide, base narrower than apex, feebly constricted in front of middle, strongly compressed at sides behind, disc moderately convex, very sparsely and finely punctured, a feeble ante-scutellar impression; color piceous, basal and apical margins paler. Scutellum cordiform, base with feeble notch. Elytra nearly twice as wide as base of thorax, humeri distinct, sides nearly parallel, apices conjointly rounded, disc moderately convex, with rows of coarse quadrate punctures becoming gradually finer posteriorly, and at apex nearly obliterated, intervals with a row of fine but distant punctures; color piceous brown with narrow ante-median yellow fascia, frequently interrupted at suture and margin, becoming a central spot. Body beneath very minutely and sparsely punctulate, somewhat paler than above, legs ferruginous brown, femora darker at middle. Length .14—.22 inch; 3.5—5.5 mm.

Male.—Fifth ventral arcuate, sixth short, broadly emarginate, as broad as the last dorsal but much shorter, the latter semicircular with a feeble notch at middle. (Pl. I, fig. 2).

Female.—Fifth ventral truncate, sixth short, rounded at tip, last dorsal semicircular.

Occurs from western Texas, through Arizona to Fort Yuma, California, thence through the peninsula to Cape San Lucas. This is the smallest species in our fauna and relatively, with coarser elytral punctures, the intervals between them being very much narrower than the punctures themselves.

C. Xanti, n. sp.—Form moderately robust, pale castaneous, moderately shining, sparsely pubescent. Head finely punctured, eyes moderately convex. Antennæ barely attaining the middle of the body, second joint short, half the length of third, which is but little shorter than the fourth, five to ten equal, subserate, eleventh longer, acute. Thorax one-fourth longer than wide, wider at apex than base, moderately compressed behind the middle, no ante-scutellar impression, surface finely and sparsely punctate. Scutellum broadly oval, feebly emarginate at tip. Elytra nearly twice as wide as thorax at base, humeri distinct, sides parallel, tips conjointly rounded, disc slightly flattened and with striæ of coarse punctures gradually becoming finer to apical fourth where they become obsolete, intervals rather broad and with one row of fine,

distant punctures. Body beneath as above, metasternum sparsely punctured at the sides, abdomen finely and more densely punctate. Legs castaneous. Length .26 ♂—.30 ♀ inch; 6.5—7.5 mm.

Male.—Hind margin of fifth ventral feebly arcuate, sixth short, broadly emarginate, slightly narrower than the pygidium which is nearly semicircular, and prolonged beyond the last ventral. (Pl. I, fig. 3).

Female.—Fifth ventral truncate, sixth short, rounded, margin reflexed, last dorsal semicircular.

Collected at Cape San Lucas, by Mr. John Xantus.

This species resembles *usta* and *brunnea*, but is paler in color and may be known by the structure of the antennæ. The two lateral rows of punctures end almost abruptly at middle.

C. usta, Lec.—Form moderately robust, color pale brown, surface sparsely pubescent. Head sparsely punctulate, eyes moderately prominent. Antennæ as long as half the body, joints two to three obconical, equal, together but little longer than the fourth, four to ten nearly equal, eleven somewhat longer. Thorax one-third longer than wide, base narrower than apex, feebly constricted in front of middle and rather strongly compressed at sides behind, no ante-scutellar impression, disc very sparsely and finely punctulate. Scutellum oval. Elytra twice as wide at base as thorax, humeri distinct, sides parallel, apex conjointly rounded, disc feebly convex, with striæ of moderate punctures becoming gradually smaller and extending to apical four-fifths where they become entirely obliterated, lateral striæ long; intervals broad, flat, with a single row of minute punctures. Body beneath and legs colored as above; metasternum very sparsely punctured at the sides, abdomen more densely punctulate. Length .38 inch; 9.5 mm.

Male.—Unknown.

Female.—Last ventral very short, broadly but very feebly emarginate, last dorsal slightly longer and semicircular. (Pl. I, fig. 4).

One specimen collected by Berlandiere, in southwestern Texas, resembles a small *brunnea*, but may be known by the antennal structure.

C. brunnea, Mels.—Dark brown, moderately shining, very sparsely pubescent. Head densely punctured, eyes feebly prominent. Antennæ very little longer than the head and thorax, joint two equal to fourth, third slightly longer, four to ten short, conical, nearly equal, eleventh longer than the two (♀) or four (♂) preceding together. Thorax robust, scarcely a fourth longer than wide and but little narrowed at base, very feebly constricted in front of middle, rather strongly compressed at sides posteriorly, no ante-scutellar impression, disc convex, very densely punctulate. Scutellum orbicular. Elytra nearly twice as wide at base as thorax, humeri distinct, sides parallel, apices conjointly rounded, disc moderately convex, with ten rows of coarse, quadrate, closely placed punctures extending from base to apex, intervals slightly broader than the striæ, feebly convex and with a row of very minute punctures. Body beneath and legs dark brown, abdomen paler, sides of metasternum coarsely and densely punctured, abdomen finely and sparsely punctured. Length .30—.56 inch; 7.5—14 mm.

Male.—Fifth ventral feebly arcuate, sixth short, trapezoidal, truncate at tip and narrower than the last dorsal which is elongate, gradually narrowed toward the tip, the latter rounded. (Pl. I, fig. 5).

Female.—Last ventral semicircular, last dorsal trapezoidal and feebly arcuate at tip.

The sexual differences in the antennæ have been given above, this being our only species in which such exist.

Occurs in Pennsylvania, Missouri, and Texas.

C. bicolor, (Say).—Form elongate, body black, feebly shining, thorax (except apical and basal margins), basal half of femora and first two joints of antennæ reddish-yellow. Head black, sparsely punctured, labrum and palpi yellow, eyes prominent. Antennæ black except at base, longer than one-third the body, joint two very little shorter than the following, three to ten elongate, nearly equal, feebly subserrate, eleventh longer, paler at tip. Thorax one half longer than wide, feebly constricted in front, moderately compressed at sides behind, median convexity at sides moderately strong, no ante-basal impression, disc very sparsely punctate, color reddish-yellow with a narrow basal and apical black margin. Scutellum transversely oval. Elytra twice as wide as thorax at base, humeri distinct, sides parallel, apices conjointly rounded, disc moderately convex, with striæ of moderate punctures becoming gradually feebler to apex: color black, epipleuræ paler. Body beneath piceous, very sparsely and finely punctured, abdomen with paler spots at the side of each segment. Legs black, base of femora yellow, tibiæ at tip piceous or somewhat paler. Length .30—.36 inch; 7.5—9 mm.

Male.—Fifth ventral arcuate at tip, sixth short, semicircular, feebly emarginate at tip, last dorsal longer and broader, longer than wide, broader at tip with angles broadly rounded and tip emarginate. (Pl. I, fig. 6).

Female.—Fifth ventral truncate, sixth semicircular and yellow, last dorsal oval at tip, longer than the last ventral, also yellow.

Occurs in the Middle and Gulf States, but is not common. May be easily known by its coloration.

The preceding and all the following species have the antennæ so nearly similar in their constituent parts, that no detailed description will be given in each, the following will answer for all: joint one stout, conical, slightly curved, two very little shorter than three, three to ten subequal, very gradually decreasing in length, eleventh longer and subacute.

C. inornata, (Say).—Form slender, color piceous, moderately shining, sparsely pubescent. Head sparsely and finely punctate, eyes feebly prominent. Antennæ ferruginous, nearly half the length of the body. Thorax nearly cylindrical, feebly narrowed at base, sides before and behind the middle slightly compressed, surface sparsely punctate. Scutellum transversely oval, emarginate at tip. Elytra of form and sculpture of *bicolor*. Body beneath and legs brownish, coxæ and tarsi paler, abdomen very finely and sparsely punctate, each segment with a yellow spot at the sides. Length .30—.36 inch; 7.5—9 mm.

Male.—Fifth ventral arcuate, sixth short, semicircular and truncate at tip, last dorsal longer, angles obtuse, with an acute but feeble emargination at tip. (Pl. I, fig. 7).

Female.—Last ventral nearly semicircular, last dorsal longer and rounded at tip.

Occurs from Canada to Georgia, and Missouri.

C. fascifera, Lec.—Form slender, color pale piceous, elytra with median yellow fascia, surface sparsely pubescent. Head rather densely and coarsely punctured, eyes feebly convex. Antennæ ferruginous, not longer than head and thorax. Thorax one-third longer than wide, base slightly narrower than apex, very feebly constricted in front of middle, moderately compressed posteriorly, surface sparsely punctured and rugulose, a feeble ante-scutellar impression. Scutellum rounded, emarginate at tip and slightly concave. Elytra twice as long as thorax and nearly twice as wide at base, humeri distinct, sides nearly parallel, apices conjointly rounded, surface with striæ of moderate punctures extending beyond the middle, becoming very small and confused at apical fourth; color pale piceous, with median yellow band, arcuate posteriorly and dentate in front, humeri testaceous with the callus piceous. Body beneath and legs testaceous, sparsely and finely punctulate. Elytra paler than head and thorax. Length .32 inch; 8 mm.

Male.—Fifth ventral arcuate posteriorly, sixth semicircular, slightly impressed at tip, last dorsal longer, broadly rounded at tip, middle of apical margin prolonged. (Pl. I, fig. 8).

Female.—Unknown.

Greatly resembles *punctata*, and can scarcely be distinguished except by the sexual characters.

One ♂ from Cape San Lucas, Lower California.

C. californica, Horn.—Brownish piceous, moderately shining, sparsely pubescent, elytra with indistinct median pale fascia. Head moderately densely punctulate, eyes moderately prominent. Antennæ ferruginous, slightly longer than head and thorax. Thorax cylindrical, very feebly constricted in front of middle and slightly compressed behind, no ante-scutellar impression, disc not densely punctulate. Scutellum slightly transverse, longitudinally concave and smooth at middle, tip feebly emarginate. Elytra less wide than double the base of thorax, humeri distinct, sides slightly arcuate and slightly diverging posteriorly, tip rather strongly sinuate, sutural angle prolonged ♂, tip rounded ♀, disc slightly flattened and with striæ, in pairs, of small punctures which gradually become feebler toward the tip, intervals alternately broader and with one or two rows of finer punctures. Body beneath and legs ferruginous or brownish, very sparsely and finely punctured. Length, Male .76 inch; 19 mm. Female .84 inch; 21 mm.

Male.—Sixth ventral semicircular, truncate at tip and slightly emarginate, last dorsal longer, slightly broader at tip, the sides elevated in an obtuse carina with the angles reflexed, at middle an obtuse carina not attaining the apex, terminating abruptly. (Pl. I, fig. 9).

Female.—Sixth ventral semicircular, apex rounded. Last dorsal similar to male with the median carina prolonged in point at tip.

This species is the largest in our fauna, and may be known by the form of the tip of the elytra, and by the arrangement of the striae in pairs.

Occurs in the lower Coast Range of California, and also in Arizona. (Cab. Ulke ♀).

C. morosa, Lec.—Piceous, form moderately slender, sparsely pubescent. Head moderately densely punctate, eyes moderately prominent. Antennae nearly half the length of body, pale brown. Thorax one-third longer than wide, feebly constricted in front of middle, slightly compressed posteriorly, base slightly narrower than the apex with a feeble ante-scutellar impression, disc moderately densely punctate. Scutellum transverse, tip broadly emarginate. Elytra nearly twice as wide as base of thorax, humeri distinct, sides nearly parallel, apices conjointly rounded, disc with rows of moderately coarse punctures extending two-thirds to apex (the outer rows longer), and gradually becoming feebler, an indistinct transverse fascia very slightly in front of middle. Body beneath and legs brownish, very sparsely punctulate. Length .48 inch; 12 mm.

Male.—Fifth ventral very deeply emarginate, sixth elongate parallel, angles rounded prolonged in a point which is strongly incurved, the angles with a carina which extends two-thirds the length of the segment, tip broadly emarginate. Last dorsal elongate, narrower than the ventral, slightly narrowing to the tip which is triangularly notched, the angles being acute. Penultimate dorsal broadly emarginate. (Pl. I, fig. 10).

Female.—Unknown.

One specimen from Northern Sonora.

I do not find the specimen quite as long as the measurement originally given, (.53 inch). Resembles *inornata*, but less slender and easily known by sexual differences.

C. Belfragei, n. sp.—Very closely resembling *morosa* with the following differences: Thorax moderately punctured anteriorly, very feebly punctured at posterior three-fourths, ante-scutellar impression rather strong. Scutellum transversely oval. Striae coarser and with more deeply impressed punctures, fascia slightly behind the middle and with irregular margins. Abdomen with rather coarse punctures sparsely placed. Length .48 inch; 12 mm.

Male.—Fifth ventral deeply emarginate, last ventral nearly square, slightly broader to tip which is deeply emarginate, angles prolonged, not incurved and with a carina extending two-thirds to base. Last dorsal elongate oval, acutely notched at tip, angles rounded. Penultimate dorsal emarginate. (Pl. I, fig. 11).

Female.—Fifth ventral feebly emarginate, sixth short, semicircular, notched at tip. Last dorsal narrower, slightly longer and acutely notched at tip.

This species differs from *morosa* in the sexual characters of the male, and the more feeble characters of sculpture as noted above.

Collected by Mr. G. W. Belfrage, in Waco County, Texas.

The three species which follow do not admit of their characters

being tabulated in a positive manner. The following may serve for the two sexes, the males being easily known by their peculiar characters.

Elytral sculpture almost entirely obliterated, traces of the rows of punctures remaining only at base. Thorax moderately long, distinctly broader in front, not coarsely punctate.....**oblita.**

Elytra with the usual distinct rows of punctures.

Thorax nearly cylindrical, coarsely and densely punctured. Striæ of elytra with deep punctures, extending to three-fourths.....**punctata.**

Thorax more robust, considerably broader in front, rather sparsely punctured. Striæ of elytra with feeble punctures extending barely to middle.

fuscula.

C. oblita, n. sp.—Pale brownish, moderately shining, sparsely pubescent, form elongate. Head darker, moderately densely punctured, eyes feebly prominent. Antennæ ferruginous, nearly half the length of body. Thorax nearly a third longer than wide, base slightly narrowed, slightly constricted in front of middle, and rather strongly compressed posteriorly, ante-scutellar impression well marked, surface very sparsely punctulate. Scutellum broader than long, slightly emarginate at tip. Elytra twice as wide as base of thorax, humeri distinct, sides parallel, tip conjointly rounded, disc sparsely and irregularly punctate, the striæ evident for a very short extent at base, a median indistinct transverse fascia. Body beneath very sparsely punctate. Length .44 inch; 11 mm.

Male.—Fifth ventral very deeply emarginate, sixth longer than wide, sides straight and gradually narrowing to apex, angles slightly prolonged, acute, between which the tip is rounded. Penultimate dorsal emarginate, last dorsal elongate oval, narrower than the ventral, tip feebly emarginate. The angles of the last ventral segment are carinate, the lower face especially at base obtusely elevated at middle. (Pl. I, fig. 12).

Female.—Unknown.

One specimen from Camp Grant, Arizona.

The elytral sculpture may possibly be a peculiarity of the unique before me, but in any case the male characters suffice to distinguish the species from any other.

C. punctata, Lec.—Pale brownish testaceous, form slender, sparsely pubescent, legs with rather long hairs. Head rather coarsely and densely punctate, eyes moderately prominent. Antennæ ferruginous, longer than one-third the body. Thorax nearly twice as long as wide, cylindrical, slightly constricted in front of middle and feebly compressed behind it, no ante-scutellar impression, disc coarsely and densely punctate. Scutellum oval, narrower at base. Elytra less than twice the width of thorax at base, humeri distinct, sides slightly divergent posteriorly, apices conjointly rounded, disc with striæ of moderately coarse punctures extending three-fourths to apex, becoming gradually finer and confused at tip, and with a pale fascia behind the middle, extending along the margin toward the apex. Body beneath paler than above, sides of metasternum with coarse but sparse punctures, abdomen still paler, sparsely punctulate. Length .30 inch; 7.5 mm.

Male.—Fifth ventral deeply emarginate, sixth oval, longer than wide, feebly emarginate at tip; last dorsal oval, longer than wide and truncate at tip. (Pl. I, fig. 13). *Female*.—Unknown.

Occurs near Fort Yuma, California.

C. fuscula, Lec.—Brownish testaceous, form less slender, sparsely pubescent. Head moderately densely, but not coarsely punctured, eyes moderately prominent. Antennæ as long as half the body, ferruginous. Thorax scarcely a fifth longer than wide, base much narrower than apex, feebly constricted in front of middle, rather strongly compressed posteriorly, ante-scutellar impression distinct, disc sparsely and finely punctate. Scutellum subquadrate, truncate at tip. Elytra twice as wide as base of thorax, humeri distinct, sides nearly parallel, apices conjointly rounded, disc with striæ of feeble punctures extending barely to middle, the outer striæ longer, apical third of elytra finely punctulate; an irregular testaceous fascia at middle sometimes becoming a mere spot on each elytron. Body beneath and legs very sparingly punctulate, paler in color than above. Length .22—.28 inch; 5.5—7 mm.

Male.—Fifth ventral deeply emarginate, sixth oval, broadly but feebly emarginate at tip, last dorsal narrower than the ventral, sides nearly straight and convergent, tip very feebly emarginate. (Pl. I, fig. 14).

Female.—Last ventral oval at tip.

This species occurs at Fort Yuma, and also in Arizona, where I found specimens about the exuded gum of the Mesquite tree.

C. undulata, Say.—Form slender, color brownish, legs and abdomen pale testaceous, elytra with three transverse dentate testaceous fasciæ. Head brown, densely punctured, eyes feebly prominent. Antennæ nearly half the length of the body, ferruginous. Thorax one-half longer than wide, densely punctured, base narrower than apex, in front of middle moderately constricted, posteriorly rather strongly compressed, ante-scutellar impression well marked. Scutellum transversely oval. Elytra nearly twice as wide as base of thorax, humeri distinct, sides gradually divergent, apices conjointly rounded, disc with striæ of coarse punctures which gradually become finer and extend four-fifths to apex. Body beneath brown, abdomen and legs testaceous, very sparsely punctate. Length .42 inch; 10.5 mm.

Male.—Fifth ventral deeply emarginate, sixth trapezoidal, longer than wide, emarginate at tip with the angles obtusely prominent. Last dorsal elongate, oval, narrower than the ventral, truncate at tip. (Pl. I, fig. 15).

Female.—Last ventral nearly semicircular, subtruncate at tip, last dorsal similar in shape but longer.

I have united *balteata*, Lec., with this species, although the thorax is less decidedly constricted before and behind the middle. The type is a female and gives no character different from the female of *undulata*. The discovery of the male may, however, cause it to be separated, as we have already seen that the most trifling superficial characters indicate a difference of species, better defined by sexual peculiarities.

Occurs from the Middle States to Kansas and Texas.

C. angustata, Spin.—Pale brown, form rather slender, body apterous, surface sparsely pubescent, elytra with three indistinct, paler transverse fasciæ. Head rather coarsely and densely punctured, eyes feebly prominent. Antennæ ferruginous, nearly half the length of body. Thorax one-third longer than wide, very feebly constricted in front of and behind the middle, base somewhat narrower than apex with distinct ante-scutellar impression and a tubercle on each side, surface densely and coarsely punctured. Scutellum transversely oval. Elytra very little wider at base than the thorax, humeri feeble, sides feebly arcuate and slightly diverging to apex, tips separately rounded, disc with rows of coarse punctures which gradually become more distant and somewhat smaller to apical fourth. Body beneath and legs paler, sparsely punctate. Length .30—.44 inch; 7.5—11 mm.

Male.—Fifth ventral deeply emarginate, sixth elongate, sides nearly parallel with the tip, deeply emarginate, the angles prolonged, obtuse. Last dorsal ob-oval, tip with a small acute notch limited on each side by a small acute tooth; penultimate dorsal broadly triangularly emarginate. (Pl. I, fig. 16).

Female.—Fifth ventral feebly emarginate, sixth broadly oval at tip. Last dorsal more elongate oval.

Occurs at Fort Yuma and elsewhere in the south of California. It is more coarsely punctured than *ovipennis*, with less oval elytra and different male characters.

C. ovipennis, Lec.—Pale brown, elytra with indistinct median pale fascia. Head densely punctured, eyes moderately prominent. Antennæ ferruginous, nearly half the length of body. Thorax one-half longer than wide, rather strongly constricted in front of middle and strongly compressed posteriorly, ante-scutellar impression rather strong with a tubercle on each side, surface sparsely punctured. Scutellum oval. Elytra scarcely wider at base than the thorax, sides moderately arcuate and divergent posteriorly, apices conjointly rounded, disc with striæ of coarse punctures extending to middle, the outer striæ longer. Body beneath paler, very sparsely punctate. Length .34—.44 inch; 8.5—11 mm.

Male.—Fifth ventral moderately emarginate, sixth very deeply emarginate with the angles prolonged; penultimate dorsal feebly emarginate, last dorsal longer than wide, truncate at tip with a long acute notch. (Pl. I, fig. 17).

Female.—Last ventral semicircular, last dorsal subtruncate at tip.

The males of this species show a very feeble truncation of the tips of the elytra, which might readily escape notice.

Occurs at Fort Tejon, California, and is not rare. The elytra are more decidedly oval than in *angustata*, and the male characters sufficiently different.

C. pilosella, Lec., is founded on two small females, which agree in all the important characters with *ovipennis*, the above description applying equally to this except as to size, (.26 inch). I do not feel warranted in continuing it as a distinct species, but the discovery of a corresponding male may lead to different results.

C. tenera, Lec.

This species has caused me much trouble, the type and only specimen known is in a bad state and very immature. It agrees in form, size, and sculpture, with *inornata*, and the description will answer equally well for this, except that there is a circum-humeral pale space and irregular median fascia. I have never seen specimens of *inornata* showing any trace of fasciæ, although such traces do exist in the black elytra of *bicolor*, and did this unique resemble the normal *bicolor* as closely as it does *inornata*, I would have no hesitation in uniting them in view of the traces of fasciæ which exist. I must, however, strongly incline to the view of its identity with *inornata*, and leave the matter to future collectors.

There are two other specimens, both females, from Texas, which indicate distinct species, not knowing the males I must decline to name them, but will give short descriptions.

C. ———, —Form and sculpture of *undulata*, legs brown, elytra with post-humeral pale lunule, a median sinuous band, and apex pale. Body beneath dark brown. Length .40 inch; 10 mm.

C. ———, —Form and sculpture of *fuscula*, elytra with median pale fascia and a common subapical spot, divided by the suture. Length .30 inch; 7.5 mm.

These two species should be placed near those with which I have compared them.

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C. punctata, Lec., Ann. Lyc. V., p. 212.
C. fuscula, Lec. Ann. Lyc. V., p. 212.
C. oblita, n. sp.
C. undulata, Say., (*Tillus*), Journ. Acad. V., p. 174; Lec., Ann. Lyc. V., p. 15.
longicollis, Spin., Mon. Cler. I., p. 147, pl. 10, fig. 1.
Bosci, Chev., Ann. Ent. Soc. Fr., 1843, p. 31.
var. balteata, Lec., Proc. Acad., 1854, p. 81.

C. angustata, Spin., Mon. Cler. I., p. 149, pl. 7, fig. 1.

C. ovipennis, Lec., Proc. Acad., 1859, p. 76.

var. *pilosella*, Lec., New Species, p. 95.

Note.—In the Catalogus, (Gemminger and Harold), p. 1726, a *C. cratægi*, Bland appears, with a reference. No such species was ever published.

TRICHODES, Hbst.

Our species are so few in number and so easily distinguishable as hardly to need comment. The occurrence of a singular species from Arizona, gives the opportunity for a few remarks which may be put in the form of a table.

Elytra with tip truncate and sinuate in ♀ **illustris**.

Elytra rounded at tip in both sexes.

Elytra bluish, variegated with yellow or reddish bands, rather finely scabropunctate. Thorax very sparsely punctured.

Elytra with three yellow bands, the basal enclosing a humeral blue spot, extending backward along the suture; a median oblique band; a sub-apical band, oblique from behind anteriorly to suture. Tibiæ usually pale..... **ornatus**.

Elytra with three transverse bands of red or yellow, basal, median and sub-apical. Legs entirely blue..... **Nuttalli**.

Elytra with red spot on the side of each elytron near the middle, sometimes entirely wanting..... **bisignatus**.

Elytra red or orange, with transverse bands of violet black, surface with very coarse and deep punctures. Thorax densely punctured.

Elytra with two transverse bands and tip black..... **apivorus**.

Elytra with two broad transverse bands..... **bibalteatus**.

The sexual characters are very much alike in all the species, and may be seen on pl. I, fig. 28.

T. illustris, n. sp.—Form elongate, parallel, body metallic blue, elytra variegated, legs ferruginous. Head blue, densely punctured, sparsely pubescent; antennæ pale. Thorax oval, longer than wide, constricted at base, surface densely punctured and sparsely pubescent, with smooth median line posteriorly. Elytra parallel, conjointly rounded ♂, truncate and sinuate at tip ♀, disc with rows of very coarse punctures becoming smaller at sides, and smaller and confused behind the middle; color brownish ferruginous, with a basal yellow band prolonged along the suture, but not dilated, a band at middle slightly oblique, another at three-fourths, extending obliquely forward from the margin to the suture, yellow bands bordered with black, which also extends along the margin except at tip. Body beneath densely punctured, metasternum densely clothed with whitish hairs on each side of middle, abdominal segments with whitish hairs on the posterior margin at the side. Length .54 inch; 13.5 mm.



This species is entirely unlike any of our others, although allied by

its markings to *ornatus*. There is, however, no humeral dark spot; the umbone is prominent and less punctured. The sexual ventral characters are as in the other *Trichodes*.

The two specimens before me, (the ♂ was kindly loaned by Mr. Ulke), were obtained by Mr. Otto Luggar, (of Baltimore), from Arizona.

In the above wood cut the white portions are yellow, the lined spaces ferruginous, and on the margins of the yellow are the black borders. The male in the cabinet of Mr. Ulke, is smaller and the dark colors are lighter, so that, what is described as black in the female is brown, and the brown is dirty ochreous.

The sexual characters of North American CICINDELIDÆ with notes on some groups of CICINDELA.

BY GEORGE H. HORN, M. D.

The present paper is the first of a series which I hope to continue from time to time, in which the sexual characters of each genus in our fauna will be fully exposed, and noticing at the same time any special characters whether sexual or not, likely to prove useful to the systematist.

I am not aware that any similar work has ever been attempted, while its great utility must be acknowledged by all. In most of the larger works on the genera of Coleoptera, mention is made of the more prominent sexual characters, while others less obvious but often more useful are entirely omitted, and it is to these that I desire to devote special study.

It is often annoying in studying a generic synopsis to find groups indicated in which the males do or do not possess a given character, and this is frequently the only sexual character spoken of at all, its absence being peculiar to all the females and a portion of the males, and there is no additional character given which will absolutely distinguish all males from the females.

It is my desire to bring together in one paper all the sexual characters heretofore known, and to add whatever new it may be my good fortune to discover. Some characters may be overlooked, but with the present as a basis, others may be added as each investigator may find them.